## (19) World Intellectual Property Organization

International Bureau



## . I CERTA CHILEGOLIA BARNE ATRIA GENERALIA ELEKATRIKA ELEKATRIKA GUNU GUNU CHILA COMPANIA ELEKATRIKA GENERALIA

(43) International Publication Date 24 December 2003 (24.12.2003)

**PCT** 

## (10) International Publication Number WO 2003/105678 A3

(51) International Patent Classification7:

A61B 3/12

(21) International Application Number:

PCT/US2003/018511

(22) International Filing Date: 11 June 2003 (11.06.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/388,036

12 June 2002 (12.06.2002) US

- (71) Applicant (for all designated States except US): AD-VANCED RESEARCH AND TECHNOLOGY INSTI-TUTE, INC. [US/US]; 351 West 10th Street, Indianapolis, IN 46202 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): MILLER, Donald, T. [US/US]; 2411 Goldin Ct., Bloomington, IN 47401 (US). JONNAL, Ravi, S. [US/US]; 814 West Howe Street, Bloomington, IN 47403 (US). QU, Junle [CN/US]; 800 E. Atwater Ave., Bloomington, IN 47405 (US). THORNE, Karen, E. [NZ/US]; 1043 South Mitchell Street, Bloomington, IN 47401 (US).

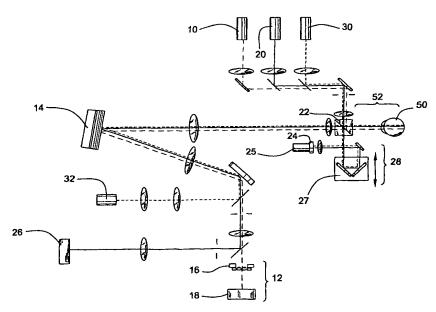
- (74) Agents: HASAN, Salim, A. et al.; Leydig, Voit & Mayer, Ltd., Suite 4900, Two Prudential Plaza, 180 North Stetson, Chicago, IL 60601-6780 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

## Published:

with international search report

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR IMPROVING BOTH LATERAL AND AXIAL RESOLUTION IN OPHTHAL-MOSCOPY



(57) Abstract: The invention provides a method of optical imaging comprising providing a sample to be imaged, measuring and correcting-aberrations associated with the sample using adaptive optics, and imaging the sample by optical coherence tomography. The method can be used to image the fundus of a human eye to provide diagnostic information about retinal pathologies such as macular degeneration, retinitis pigmentosa, glaucoma, or diabetic retinopathy. The invention further provides an apparatus comprising an adaptive optics subsystem and a two-dimensional optical coherence tomography subsystem.